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A new species of *Dictyostelium* from Tibet, China

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Abstract — A new species, *Dictyostelium microsorocarpum,* was isolated from meadow soil in Tibet, China. It is characterized by its small sorocarps, multicellular sorophores and relatively large sori. Detailed descriptions and photographs are provided based on the holotype.

Key words — dictyostelids, taxonomy

Introduction

The genus *Dictyostelium* of Mycetozoa was established by Brefeld (1869). Up to now, more than 60 species of *Dictyostelium* have been described in the world (Kirk et al. 2008).

The dictyostelids may be divided into three groups based on the size of their sorocarps: large, ≥10 mm; intermediate, 3–9 mm; and small, <2 mm (Cavender et al. 2005). During our investigation of dictyostelids in Tibet, a new small species of *Dictyostelium*, *D. microsorocarpum* was obtained from meadow soil in Linzhi, Tibet. It differs from all described small species (Raper 1984, Cavender et al. 2005, Vadell et al. 2007) of *Dictyostelium* in having a combination of small sorocarps, multicellular sorophores, a disproportionate number of large sori to small sorocarps. The descriptions, photographs, and a discussion of this species are given below.

Materials and methods

Samples for isolation of dictyostelids were collected during August 2007 from Linzhi and Lhasa, Tibet. The isolation, cultivation and observation procedures are the same as those described previously (He et al. 2008).

The type specimen is preserved in the Herbarium of the Mycological Institute of Jilin Agricultural University (HMJAU), Changchun, China.

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Taxonomy

Dictyostelium microsorocarpum Yu Li & Xiao-Lan He, **sp. nov.** Fig. 1

MycoBank MB 512589

Sorocarpia in cultura in agaro nonnutricio cum Escherichia coli ad 22°C solitaria, erecta vel semi-erecta, eramosa, habitu valida, parva, 0.16–1.5 mm longa, plerumque 0.8–1.2 mm (media 0.98 mm). Sorophora plerumque robusta, non angustata ex basis ad apicem in segmento erecta, plerumque multicellularia, 10–20 μm in diametro. Bases clavatae multicellulares, prostratae ab sorogena provecta elongata producentes, plerumque e strato cellularum singulo compositae, interdum sustinentes, segmenta erecta multicellularia, segmenta prostrata erectis segmentis angustiora. Apices multicellulares. Sori globosi vel subglobosi, hyalino-albi, comparate magni, plerumque 64–136 μm in diametro. Sporae ellipticae vel oblongae, glabrae, sine polaribus granulis, plerumque 6.0–7.6 × 3.6–4.4 μm. Aggregationes cellularum radiatae, magnitudine non uniformes, rivulus convergens quum sorogena formantia. Plerumque quaque aggregatio sorogenum singulum producens. Sorogena hyalinoalba, apices conspicuae, plerumque cylindricae, apice rotundato-conicae. Sorogena serotina curviora. Myxamoebae non distinctae, comparate magnae, plerumque 19.3–23.1 × 11.6–16.9 μm, contractiles vel vacuolam pabulorum prominentes, forma irregularis. Myxamoebae non aggregatae microcystam facientes. Microcystae rotundae vel subrotundae, magnitudine non uniformes, plerumque 5–7 μm in diametro, interdum dominantes in cultura; macrocystae non observatae.

Holotype: MR003. Isolated from meadow soil, Linzhi, Tibet. Deposited at the Herbarium of the Mycological Institute of Jilin Agricultural University (HMJAU), Changchun.

Etymology: Latin, *microsorocarpum,* referring to the small sorocarps.

When cultured on non-nutrient agar with *Escherichia coli* at 22°C, sorocarps solitary, erect or semi-erect, unbranched, stout in appearance, small, commonly 0.16–1.5 mm, mostly 0.8–1.2 mm (average 0.98 mm). Sorophores commonly robust, without conspicuous tapering from the bases to the tips in erect structures, generally consisted of several tiers of cells, mostly 10–20 μm in diameter. Bases clavate or having lengthened prostrate segments on the culture, sometimes with supporters, the club-shaped bases multicellular, the 1-celled prostrate bases produced by the advancing sorogen and narrower than the stand-up segments of sorophores. Terminal segment of sorophore multicellular. Sori globose or subglobose, colorless or white, comparatively large, commonly 64–136 μm in diameter. Spore elongate, elliptical or nephroid, colorless, having no polar granules, commonly 6.0–7.6 × 3.6–4.4 μm. Cell aggregations radiate in pattern, variable in dimensions, streams tending to converge as sorogens being formed, commonly each aggregation producing a single sorogen. Sorogens colorless, with conspicuous tips, mostly bullet-shaped. Late sorogens tending to curve. Myxamoebae not distinctive, relatively large, commonly 19.3–23.1 × 11.6–16.9 μm, with contractile and food vacuoles prominent, irregular in shape. Myxamoebae becoming microcysts when not aggregated. Microcysts sometimes dominant in the culture, globose or nearly globose, variable in size, mostly 5–7 μm in diameter; macrocysts not observed.

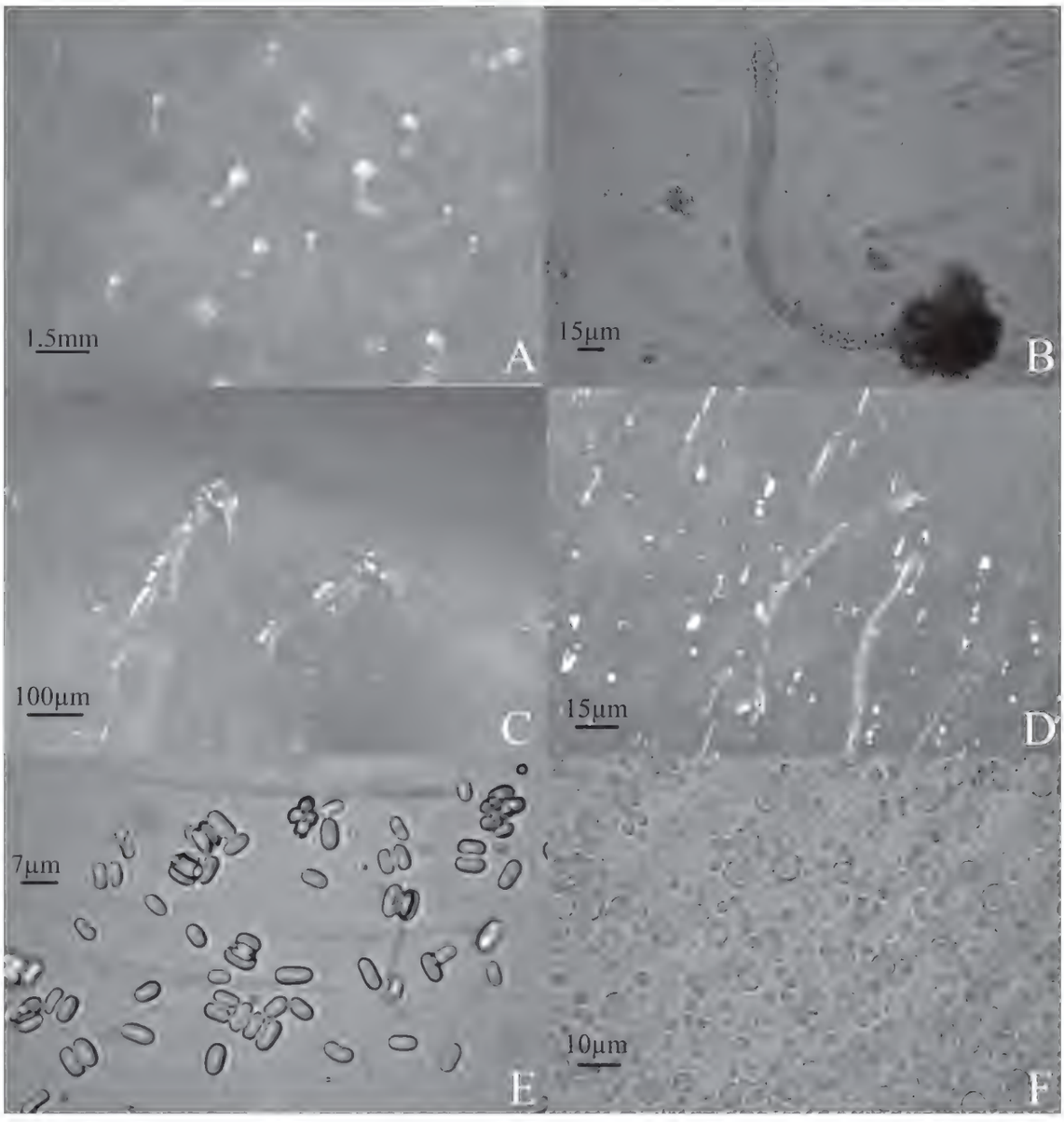

Fig. 1 *Dictyostelium microsorocarpum*
A, Sorocarps; B, Multicellular sorophore; C, Aggregations;
D, Sorogens; E, Elliptical spores; F, Microcysts.

Comments: The present cellular slime mold is a different small species of dictyostelids. The sorophores of the small dictyostelids commonly consist of single tiers of cells except in basal portions, while the present small species has typical multicellular sorophores. *Dictyostelium microsorocarpum* resembles *D. macrocephalum* (Hagiwara et al. 1985) in the disproportionate number of large sori to small sorocarps. However, *D. macrocephalum* has thin sorophore tips and neither microcysts nor macrocysts observed during the course of culture (Hagiwara et al. 1985), while *D. microsorocarpum* has multicellular sorophore tips and numerous microcysts. Furthermore, *D. macrocephalum*

produces a larger sorocarp than that of *D. microsorocarpum*. The present new species never exceeds 2 mm in size, while *D. macrocephalum* ranges 0.25–2.25 (–9.0) mm.

Dictyostelium microsorocarpum can be easily distinguished from *D. antarcticum* (Cavender et al. 2002) in that the spores of the latter species have prominent consolidated polar to sub-polar granules, which *D. microsorocarpum* lacks.

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